



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,289	12/14/2001	Jane A. Blasi	08935-244001 / M-4961	2843

26161 7590 06/22/2006

FISH & RICHARDSON PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/022,289	Applicant(s) BLASI ET AL.	
	Examiner Dah-Wei D. Yuan	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26,31,32 and 34-47 is/are pending in the application.
- 4a) Of the above claim(s) 1-18,37-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-26,31,32 and 34-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1745

ELECTROLYTE ADDITIVE FOR NON-AQUEOUS ELECTROCHEMICAL CELLS

Examiner: Yuan

S.N. 10/022,289

Art Unit: 1745

June 19, 2006

Detailed Action

1. The Applicant's amendment filed on May 1, 2006 was received. Claim 19 was amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on October 28, 2005.

Specification

3. The amendment filed May 1, 2006 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: wherein prior to discharge of the electrochemical cell the molarity of lithium ions in the electrolyte is equal to the sum of the molarity of perchlorate ions in the electrolyte and the molarity of trifluoromethanesulfonate ions, trifluoromethanesulfonimide ions or hexafluorophosphate ions in the electrolyte.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

4. The claim rejections under 35 U.S.C. 112, first paragraph, on claims 19-26,31,32,34-36 are maintained. The rejection is repeated below for convenience.

Claims 19-26,31,32,34-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The limitation “wherein prior to discharge of the electrochemical cell the molarity of lithium ions in the electrolyte is equal to the sum of the molarity of perchlorate ions in the electrolyte and the molarity of trifluoromethanesulfonate ions, trifluoromethanesulfonimide ions or hexafluorophosphate ions in the electrolyte” is not disclosed in the instant specification.

Claim Rejections - 35 USC § 103

5. Claims 19-21,34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nimon et al. (US 6,165,644).

With respect to claim 19, Nimon et al. teach a lithium battery comprising a positive electrode, a negative electrode and an electrolyte. The positive electrode may be attached to a current collector by directly forming into the current collector or by pressing a preformed electrode onto the current collector. The current collectors are typically sheet of conductive material such as aluminum or stainless steel. Exemplary but optional electrolyte salts for the batter cells incorporating the electrolyte solvents include lithium trifluoromethanesulfonimide (LiTFSI), lithium triflate, lithium perchlorate, LiPF₆, LiBF₄ and LiAsF₆. Nimon et al. further disclose the lithium battery can be either a primary battery or a rechargeable battery. See Column 7, Lines 46-50; Column 8, Lines 42-46; Column 13, Lines 5-10. However, the

invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to combine lithium perchlorate and a lithium salt selected from the group consisting of LiTFS, LiTFSI, and LiPF₆. It is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. In re Kerkhoven, 205 USPQ 1069, 1072. As a result, the molarity of lithium ions in the electrolyte is equal to the sum of the molarity of perchlorate ions and the molarity of trifluoromethanesulfonimide ions or hexafluorophosphate ions in the electrolyte prior to the discharge of the electrochemical cell.

With respect to claims 20,21, Nimon et al. teach the lithium battery can be a lithium (anode) – manganese oxide (cathode) primary battery. See Column 8, Lines 42-46.

With respect to claims 34-36, Nimon et al. teach the optional electrolyte salts for the battery include lithium trifluoromethanesulfonimide, lithium triflate and lithium hexafluorophosphate (LiPF₆). The typical concentration of the lithium salt is 0.5 moles/liter, which is equivalent to 76,000 ppm when LiPF₆ is used.

6. Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nimon et al. (US 6,165,644) as applied to claims 19-21,34-36 above, and further in view of Kim et al. (US 6,001,509).

With respect to claims 22-26, Nimon et al. teach the addition of lithium perchlorate to the electrolyte in the primary battery as discussed above. Kim et al. recognize that ionic conductivity of the electrolyte of the battery is determined by the content of the lithium

perchlorate in the electrolyte. See Column 4, Lines 25-32. Therefore, it would have been within the skill of the ordinary artisan to fabricate an electrochemical cell of Nimon comprising at least 2500 ppm to less than 20,000 ppm by weight of the lithium perchlorate in the electrolyte, because Kim et al. teach the desired ionic conductivity of the electrolyte can be achieved by modifying the content of lithium perchlorate in the electrolyte. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art. In re Boesch*, CCPA 1980, 617 F.2d 272, 205 USPQ215.

7. Claims 31,32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nimon et al. (US 6,165,644) as applied to claims 19-21,34-36 above, and further in view of Kitoh et al. (US 6,352,793 B2).

Nimon et al. disclose a primary electrochemical cell as described above in Paragraph 5. However, Nimon et al. do not disclose that the use of aluminum as the case material. Kitoh et al. teach the use of pure aluminum (melting point 660°C) as case for a lithium battery because it has light weight, excellent electron conductivity and good workability. See Column 2, Lines 15-25. Therefore, it would have been obvious to one of ordinary skill in the art to use aluminum case for the lithium battery of Nimon et al., because Kitoh et al. teach the use of aluminum battery case because of its light weight and excellent workability.

Response to Arguments

8. Applicant's arguments filed on May 1, 2006 have been fully considered but they are not persuasive.

Applicant's principle arguments are

Pozin Declaration proves that applicants had possession of an electrochemical cell covered by claim 19 prior to this amendment.

In response to Applicant's arguments, please consider the following comments.

The issue in new matter is whether or not one reading the original disclosure would have recognized that the applicant invented what is now claimed. In reading the original disclosure would one of skill in the art have recognized that the molarity of lithium ions in the electrolyte is equal to the sum of the molarity of perchlorate ions in the electrolyte and the molarity of trifluoromethanesulfonate ions, trifluoromethanesulfonimide ions or hexafluorophosphate ions in the electrolyte prior to the discharge of the electrochemical cell. There is nothing in the original specification to indicate why these materials were selected. In fact, the instant disclosure teaches the addition of non-lithium-containing salts, such as $\text{Al}(\text{ClO}_4)_3$ and $\text{Ba}(\text{ClO}_4)_2$, whose use would not support the recited relationship in claim 19. The applicant could have selected those materials for reason other than the balance in ionic molarity and the invention, as originally disclosed and claimed, could be achieved with materials that did not meet the molarity requirement now claimed.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 1745

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
June 19, 2006



DAH-WEI YUAN
PRIMARY EXAMINER